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**"Young Adults in Urban Pakistan; Barriers and Challenges for
Improving Health Behaviors in the wake of the HIV/AIDS Epidemic"**

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*Dedicated to my parents
And
my family*

ABSTRACT

Background: HIV/AIDS is spreading globally more specifically among the younger generation. The impact of HIV/AIDS on the youth cannot be underestimated. According to the UNAIDS report 2008; an estimated number of 33 million people around the globe were living with HIV in 2007, and overall, 2.0 million people died due to AIDS, compared with an estimated 1.7 million in 2001. The HIV/AIDS epidemic is most likely to affect health status, economic conditions and family situations. Unprotected sex with an infected partner, contact with infected blood, sharing of drug needles or syringes and mother to child transmission are the modes which cause HIV infection. Surveillance data of Sindh AIDS Control Program, Pakistan suggest that HIV infection is rapidly increasing among injecting drug users (IDUs) and had reached 9% in 2004-5 indicating that Pakistan has entered the 'concentrated epidemic' stage for HIV/AIDS i.e. the HIV prevalence in high-risk subpopulations is 5% or higher. This poses a serious threat of a generalized epidemic especially among the younger population of Pakistan. The prevalence of HIV infection among female sex workers was minimal. Cultural and religious constraints in discussing reproductive health issues and lack of youth clinics further makes the younger generation more vulnerable to HIV/AIDS.

Aim: The overall aim of this thesis is to explore and describe young adults' knowledge and perceptions on sexual and reproductive health with special reference to HIV/AIDS, future gender roles and implications for health behaviors and prevention in Karachi, Pakistan.

Methods: The studies were conducted in the city of Karachi, Pakistan, which is the largest city and the economic and commercial hub of Pakistan and comprises of people from all ethnic backgrounds. Karachi is divided into 18 towns based on administrative units. This project has used both quantitative (study I and II) and qualitative methods (study III and IV). A population-based, cross-sectional study of 1,650 young adults (male n=826) and (female, n=824) aged 17-21 years living in Karachi was conducted using a structured questionnaire (study I and II). A multi-stage cluster sampling design was used to collect data representative of the general population in an urban area in all 18 towns of Karachi. School/college dropouts and preliminary knowledge about STDs were assessed (Study I), further knowledge about HIV/AIDS was assessed (study II). Bivariate and multivariate analyses were performed separately for males and females. A qualitative exploratory study was carried out (study III and IV). Focus group discussions were used for data collection. Participants, both males and females aged 17-21 years were purposively chosen from three different social strata. Altogether, six FGDs (6-8 participants in each FGD) were conducted in the local language Urdu, two from each social stratum. Knowledge and perceptions of HIV/AIDS and family planning were explored (study III), the perception of future life prospects and gender roles were also discussed (study IV). Qualitative content analysis was applied to identify manifest and latent content.

Results/findings: Study I revealed that females were twice as likely to dropout of school/college as males. The risk factors for school/college dropout for both males and

females were migrant residential status, living in an extended family and low socio-economic status. Furthermore, females exhibited a higher level of awareness about STDs and HIV/AIDS than the males, irrespective of whether they had dropped out of school or not. While the males who dropped out were considerably less aware than those who remained at school, there was no such difference among females. Knowledge of HIV/AIDS was assessed in detail (study II), and it was found that out of 1,650 subjects, 24 per cent (n=390) reported that they had not heard of HIV/AIDS. Among the males, those with a poor HIV knowledge were younger (AOR=2.20; 95 per cent CI, 1.38, 3.49) and had less than six years of schooling (AOR=2.46; 1.29 4.68) with no access to computer at home (AOR=1.88; 1.06 3.34). Among the females, the risk factors for poor knowledge were young age (AOR=1.74; 1.22, 2.50), low socio-economic status (AOR=1.54; 1.06, 2.22), lack of enrolment at school/college (AOR= 1.61; 1.09, 2.39) and being unmarried (AOR=1.85; 1.05, 3.26). Knowledge and perceptions of HIV/AIDS and family planning was further explored (study III). The main theme that emerged from the focus group discussions was “Need for multilevel strategies to combat the spread of HIV/AIDS and enhanced acceptance of family planning”. A knowledge gap was revealed concerning HIV/AIDS and family planning among young males and females, who had to rely on media and peers for seeking information. Participants perceived that HIV/AIDS is incurable and carries a social stigma. Female participants pointed at the existence of societal discrimination against women with HIV/AIDS. The opposition of family planning from religious leaders was revealed. Exploring the perceptions of future life prospects and gender roles (study IV), the main theme that emerged from the focus group discussions was “Expectations of young adults in a changing society is hampered by psychosocial and gender equality constraints”. Not only did young males but young females too perceive that good education and a respectable job are obligatory for better life prospects. The major obstacles in this regard were lack of merit system and scarceness of jobs. The younger generation believes that both men and women should share household tasks. Gender inequality and the lower status of women in society were considered obstacles to development.

Conclusion: Pakistani young adults having inadequate knowledge and awareness are vulnerable to the global HIV/AIDS epidemic. Both young men and women are well motivated to acquire good education and employment; and seem to belief in gender equality. Transition to better education and gender equality will result in new health related challenges, which emphasize that these young people should be equipped with proper knowledge about STDs and health related behaviors. Religious and cultural barriers to discuss reproductive health issues further deteriorate the situation. Nevertheless, as the prevalence of HIV/AIDS is still comparatively low, the epidemic has not yet enforced a general discussion on the importance of a well-informed younger generation.

Key words: Young adults, dropouts, knowledge and awareness, HIV/AIDS, STDs, family planning, gender roles, life prospects, Karachi.

LIST OF PUBLICATIONS

The thesis is based on the following papers:

I. Farid-ul-Hasnain S, Krantz G. Assessing Reasons for School/College Dropout Among Young Adults and Implications for Awareness about STDs and HIV/AIDS: Findings from a Population-Based Study in Karachi, Pakistan. *Int J Behav Med* Jan 28, 2010.

II. Farid-ul-Hasnain S, Johansson E, Krantz G. What do young adults know about the HIV/AIDS epidemic? Findings from a population based study in Karachi, Pakistan. *BMC Infect Dis.* 2009;9:38.

III. Farid-ul-Hasnain S, Krantz G, Gulzar S, Johansson E. Exploring knowledge, attitudes, beliefs and perceptions about HIV/AIDS and family planning in a Muslim society: a qualitative study of young adults in urban Karachi, Pakistan. (*Submitted*)

IV. Farid-ul-Hasnain S, Johansson E, Mogren I, Krantz G. Young adults' views on life prospects and gender roles and its influence on health behaviour: an exploratory qualitative study from Karachi, Pakistan. (*Submitted*)

The paper will be referred to by their Roman numerals I-IV

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
AOR	Adjusted Odds Ratio
FGDs	Focus Group Discussions
GNP	Gross National Product
HIV	Human Immunodeficiency virus
ICPD	International Conference on Population and Development
IDUs	Injecting Drug Users
OR	Odds Ratio
SES	Socio-Economic Status
SPSS	Statistical Package for the Social Sciences
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Emergency Fund or United Nations Children's Fund
WHO	World Health Organization

DEFINITIONS OF TERMS

Adolescents	A person between the ages 10-19 years (1).
Attitudes	Derive from our values and knowledge and the feeling attached to the phenomenon which in turn influences our behaviour (2).
Awareness	Awareness implies knowledge gained through one's own perceptions or by means of information (3).
Contraceptives	Birth control by the use of devices (diaphragm, intrauterine device, condom), drugs or surgery (4).
Equity in health	Equity in health can be defined as the absence of socially unjust or unfair health disparities (5).
Family Planning	Family planning is defined as the voluntary, responsible decision made by individuals and couples as to the desired family size and timing of births (6).
Gender	Is the socially defined roles and responsibilities assigned to men and women, in a given culture, location, society and time (7).
Gender equality	Gender equality means that women and men have equal conditions for realizing their full human rights and for contributing to, and benefiting from, economic, social, cultural and political development (8).
Gender-related Development Index (GDI)	A composite index measuring average achievement in the three basic dimensions captured in the human development index; a long and healthy life, knowledge and a decent standard of living—adjusted to account for inequalities between men and women (9).
Gender roles	A gender role is defined as a set of perceived behavioral norms associated particularly with males or females, in a given social group or system (10).

Life prospects	Refers to the vision for life in terms of education attainment, job seeking and setting up a family.
Reproductive health	A state of complete physical, mental, social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system, to its functions and processes (7).
Reproductive rights	These are integral to the concept of health. They are based on the vision that all individuals have the right to attain the highest standards of sexual and reproductive health and to make reproductive health choices free from coercion (7).
School/college dropout	Refers to someone who quits school or college (3).
Sex	Refers to the biological and physiological characteristics that define men and women (11)
Stigma	Refers to the phenomena whereby an individual with an attribute, which is deeply discredited by his/her society, is rejected as a result of the attribute (12).
Values	Refer to deeper level of attitudes and touch upon a person's fundamental philosophy of life. Values may vary across people, cultures and are general guide to our behaviors (2).
Young adults	A person between ages 17-21 years (As referred in this thesis).
Youth	A person between ages 15-24 years (1).

1. BACKGROUND

1.1 Adolescents and Youth; Global overview on HIV/AIDS Health Challenges

World population has grown to 6.8 billion in 2009; which is likely to reach 7.0 billion in the latter half of 2011, with the bulk of growth in the world's poorest nations (13). The State of World Population 2003 reported that nearly half of the world's population is under 25 years of age (7).

Transition to adulthood differs by age, gender and psychosocial stresses (14). Growing into adulthood is also shaped by social class and prevailing gender patterns and these experiences influence the life prospects and future directions of an individual (15). Globalization, a process characterized by growing interdependence of the world's people, has given the younger generations access to better communication and modern technologies, which means that they are growing up in a world much different from the period when their parents and grandparents were growing up (16). Such patterns also reshape young adult's identity specifically in low income countries, where western cultural influence is strong (16). Youth in every part of the world are affected by globalization. Nearly all of them are aware of a global culture that exists beyond their local culture, resulting in complex bicultural or multicultural identities (17). These changes have great implications for young peoples' demands for education and employment, and in redefining their gender roles. As an effect, young people's sexual and reproductive health behavior will also change.

Various behaviors of the younger generation have long-term effects on their health, such as smoking, drinking alcohol and sexual behavior (18-21). Each of these activities carries some risk. During growing age risk taking by experimentation and exploration is considered to be an integral part of youth (18). However, youth commonly underestimate their risk of disease such as STIs including HIV/AIDS (22). They generally lack proper awareness about different behaviors which makes them more vulnerable to all sorts of risks (23, 24). Even if they have knowledge about the harmful effects, it is not put into practice to show healthy behaviors (25).

HIV/AIDS is spreading globally more specifically among the younger generation. The impact of HIV/AIDS on youth cannot be underestimated. The HIV/AIDS epidemic is most likely to affect health status, economic conditions and family situations. Unprotected sex with an infected partner, contact with infected blood, sharing of drug needles or syringes and mother to child transmission are the modes which cause HIV infection (26-29). According to the UNAIDS report 2008; there was an estimated number of 33 million people living with HIV in 2007, and overall, 2.0 million people died due to AIDS, compared with an estimated 1.7 million in 2001 (30). According to the AIDS Epidemic update 2009 by UNAIDS; the total number of people living with HIV have been increased from 33 million in 2007 to 33.4 million in 2008 (31). Sub-Saharan Africa accounts for about 67% of the global population with HIV and 75% of all AIDS deaths in 2007; young people aged 15-24 years account for an estimated 45% of new HIV infections worldwide (30). In Asia, an estimated 5.0 million people were living with HIV

in 2007; with injecting drug use as the major risk factor in several Asian countries but heterosexual transmission is also becoming an increasing threat to health (30).

On the positive side; globally, the annual number of new HIV infections declined from 3.0 million in 2001 to 2.7 million in 2007 (30). Furthermore, the number of people receiving antiretroviral drugs in low and middle-income countries has increased 10-fold in only six years, reaching almost 3 million people by the end of 2007, but still large number are denied such treatment due to high cost and low availability (30). Such a positive trend in incidence are however modest in size and cannot allow the attention on this epidemic to cease.

In low-income countries, where males are assigned a higher social status than females, it is mostly put on young women's shoulders to protect themselves from sexually transmitted infections and unwanted pregnancies. At the same time they often lack access to appropriate information about contraceptives and even have poor access to relevant services for prevention and treatment (32-34). The Millennium Declaration, which was adapted by the world leaders in the September 2000 UN Millennium Summit, clearly affirm to combat the HIV/AIDS epidemic and uplift the lower status of women and gender inequality in school curricula. Moreover, one other pronounced goal was to reduce the maternal mortality and these goals are to be achieved by 2015 (35).

1.2 Reproductive Health and Rights

The term 'reproductive rights' means rights that apply once an individual reaches reproductive age; they have the right to self protection and the right to be protected against STDs (36). Young people have the right to make informed decisions about their own sexual and reproductive health; irrespective of their cultural values, religious commitments and societal norms which may condemn these behaviors (37).

One of the landmarks regarding health of young people's was the International Conference on Population and Development (ICPD) among 180 countries which was held in Cairo in 1994. The ICPD program of action reaffirms the concept of 'reproductive health' internationally (38). A "new perspective" was surfaced in population policy during the conference; directing away from a focus on human numbers to a focus on human lives, emphasizing individual rights in sexuality and reproduction (38).

Regardless of international commitments, the five years later review (ICPD 1994) revealed that the sexual and reproductive health services were still deficient and there was consensus for better access to the necessary reproductive health information and services for young people (39). Moreover, the reproductive rights aspect of the ICPD component was given less attention than the health services component (40).

A human 'rights-based' approach differs from the basic needs approach in that it recognizes the existence of 'rights' and it has proved effective in controlling HIV/AIDS (41). Gunilla Backman et al in a study on rights to health, based on assessment of 194 countries recommend that there is a need to integrate the component of 'human rights' into policies and practice for strengthening the health system (42). Furthermore,

reproductive health rights necessitate removal of regulatory and social barriers to impart reproductive health information to adolescents.

1.3 Gender and health

Gender is defined as a 'social construct' that identifies the relationship between men and women in the context of power relations (43), while 'sex' refers to the biological and physiological characteristics that define men and women (11). Hence, gender is not natural but created by society through socialization using institutions such as the family, religion, school and the state and laws. From this follows that gender is differently interpreted in different cultures and countries and changes over time in some regions towards a greater gender equality situation but in other regions towards an increasing gap in gender equality principles. Whereas gender role is a set of expectations about what behaviors are appropriate for people of one gender (43).

These gender roles are treated as ascribed roles and vary from culture to culture and they have various components including activities, responsibilities, dress, skills and interests (43). People construct themselves as 'masculine' or 'feminine' (44). As a stereotype, women are expected to take care of the household and children, whereas men are not only supposed to earn money but also to furnish the family responsibilities (44). Working women have their average wages generally lower than men's, although women do at least as many hours as men (44). Moreover women and especially women with children in large parts of the world are economically dependent on the men for their needs (44). In the recent two decades, there has been considerable debate on the health of women and men worldwide, primarily in response to increasing inequalities in the health of different groups in the society (45, 46). It is worth using a 'gender lens' to examine health issues, as gender analysis not only scrutinizes the disease pattern among men and women but also highlights the social, cultural and economic perspective within which men and women live (45-47).

ICPD clearly outlined that people are able to have a satisfying and safe sex life, and that they have the capability to reproduce and the freedom to decide (38). Implicit in this last condition are the rights of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of family planning of their choice (38). ICPD put much emphasis on women's rights and gender relations were regarded as an important determinant of reproductive behavior and decision making (38).

Gender has strong implications on HIV/AIDS, which is more apparent in sub-Saharan Africa, where 57% of infected adults (15-49 years) are women (48). Various social factors are responsible such as gender inequalities, where it is difficult for African women to negotiate condom use (48). Similar factors are threatening for women in South and South-East Asia; as social and cultural norms often prevent them from insisting on prevention methods such as the use of condoms (48). A study by Pulerwitz et al based on findings from more than 10 studies in Asia, Africa, and Latin America highlighted the importance of directly addressing gender dynamics in HIV prevention programs (49). Gender based research is an important component for successful and effective public

health policies and interventions, as gender is a social dimension relating health and disease (47).

1.4 Education

Formal education brings about better informed choices and strongly influences the health reasoning ability (50). In most low income countries resources are insufficient and increased population further curtail these resources. An increased number of young people worldwide necessitates that education should be taken on priority (51). Higher education is a key factor for prosperity and helps postpone the timing of parenthood (52).

The significance of formal education cannot be underestimated as it is also an important predictor of health behavior later in life (53) and is linked to the knowledge about HIV/AIDS (54, 55). A study in Iran revealed inverse relation between educational level and self-rated health (56). It is imperative that education should be easily accessible irrespective of social strata and sex. Formal education not only brings about lower fertility rate in women but also makes them better equipped to take care of their children (57, 58). Furthermore, enhanced female access to formal education reduces poverty in the family but also in society at large and promotes gender-equitable norms in the society (59). It is positively linked to the offspring's educational attainment (60).

2. THE STUDY CONTEXT

2.1 Karachi, Pakistan (fig.1)

The Islamic Republic of Pakistan came into being in 1947. It is located in South Asia and has a total area of 796,096 sq km (61) and is nearly four times the size of the United Kingdom. According to the latest census (1998), the population of Pakistan was 132.3 millions of which approximately 23% were adolescents (61). According to the World health statistics 2008, it was 160.9 million in 2006 (62). This enormous increase has made Pakistan currently the 6th most populous country in the world (13) (Table 1).

Pakistan shares border with India in the east and China in the north. Iran makes up the country's south-west border, and Afghanistan runs along its western and northern edge. The Arabian Sea is Pakistan's southern boundary with 1,064 km of coastline (63). Pakistan is divided into four provinces; Sindh, Punjab, Balochistan and Khyber Pukhtoonkhwa. The tribal belt adjoining Khyber Pukhtoonkhwa is managed by the Federal Government and is named FATA i.e. Federally Administered Tribal Areas. Besides, there is region of northern areas and a disputed territory 'Kashmir' between India and Pakistan in the north. Provinces of Pakistan are further divided into Districts. Islamabad is the capital city, whereas Karachi, Lahore, Peshawar, Quetta are the other major cities. Karachi is the most populous city having businesses and industries of almost all types (63).

There is a Parliamentary form of Government; parliament is the national representative body having supreme legislative powers within the state. Urdu is the National language, whereas English is the official language, used in the constitution and widely used by corporate businesses, the educated urban elite, and most universities. Pakistan is multi linguistic country as it comprises of people from various ethnicities concentrated in different provinces. Ninety five percent of the population is Muslim while 5% confess to other religions (63). The major exports are cotton, textile goods, rice, leather items, carpets, sports goods, handicrafts, fish and fruit, whereas major industries are textiles, cement, fertilizer, steel, sugar, electric goods, and shipbuilding (63).

The country of Pakistan suffered political unrest and on several occasions was under military regime. The present democratic setup is a ray of hope for the country's prosperity provided that the government focuses on institutional development and more specifically invests in education and health. The current geo-religious situation in Pakistan along the western boarder has created unrest in the country and the Government of Pakistan is trying to control the situation through military operations. Pakistan accommodated a large number of Afghan refugees after the soviet invasion to Afghanistan in 1979.

Karachi is the largest city of Pakistan and also capital of the province of Sindh. It is located on the coast of the Arabian Sea. At the time of independence the population of the city of Karachi was 1.05 million (approx) which has grown exponentially; according to Population Reference Bureau, Karachi was the 12th most populous city in the world in

2007 with a population of 12.1 million and with same growth it will be the 10th largest city worldwide with 19.1 inhabitants in 2025 (64).

The mega city is regarded as mini Pakistan as it is the cultural, economical, philanthropic, educational, and political hub. The city credits its growth to the mixed populations of economic and political migrants and refugees from different national, provincial, linguistic and religious origins who have largely come to permanently settle down (65).

Fig 1. Map of Pakistan



Source: http://thepeopleofpakistan.files.wordpress.com/2010/02/clear_pakistan_map21.gif

Table 1. Demographic and Socio-economic indicators of Pakistan.

Demographic data	Year	Estimate	Source
Total population (thousands)	2006	160,943	World Health Statistics 2008 WHO
Population under 15 years of age (%)	2006	36	World Health Statistics 2008 WHO
Annual population growth rate (%)	2005-2010	2.1	UN Population Division
Population in urban areas (%)	2007	36	UN Population Division
Sex ratio (males per 100 females) at birth	2009	106.2	UN Statistics Division
Crude birth rate (birth per 1000 population)	2007	27.0	UN Population Division
Crude death rate (death per 1000 population)	2007	7.1	UN Population Division
Maternal mortality ratio (per 100,000 live birth)	2005	320	WHO, UNICEF, UNFPA and The World Bank 2007
Life expectancy at birth in years (male)	2006	62	World Health Statistics 2008 WHO
Life expectancy at birth in years (female)	2006	63	World Health Statistics 2008 WHO
Total fertility rate (per women)	2006	3.6	WHO Statistical Information System
Infant mortality rate (per 1000 live births)	2006	78	World Health Statistics 2008, WHO
Under 5 mortality rate (per 1000 live birth) (male)	2006	98	World Health Statistics 2008, WHO
Under 5 mortality rate (per 1000 live birth) (female)	2006	96	World Health Statistics 2008, WHO
Socio-economic data	Year	Estimate	Source
Adult literacy rate, both sexes (%)	2006	50	UNESCO
Adult literacy rate, male (%)	2006	62	UNESCO
Adult literacy rate, female (%)	2006	38	UNESCO
Net primary school enrollment ratio, male (%)	2006	73	UNESCO
Net primary school enrollment ratio, female (%)	2006	57	UNESCO
Human development index (ranking)	2007-2008	136	UNDP
Gender-related development index (ranking)	2007-2008	125	UNDP

Source: UNAIDS 2008 Report on the global AIDS epidemic. Annex 2: Country Progress Indicator (66) (with few added indicators)

The population of Pakistan is growing with an annual population growth rate of about 2%, majority residing in rural areas. About 36% of population is under 15 years of age. Gender discrimination is evident in various population and social indicators; as higher sex ratio for males might attribute to sex-selective abortions (67, 68). Furthermore minimal difference in life expectancy between male and female also signify discrimination against women; as men on an average lived 5 years shorter than women (69). Lower literacy and lower net primary school enrollment ratio for females' signify gender disparity (Table 1).

2.2 HIV/AIDS and young generation in Pakistan-situation analysis

Pakistan currently has the largest group of younger population. Data from the World health statistics indicated that in the year 2006; 36% of the inhabitants comprised of a population less than 15 years of age (62). Furthermore, Population Reference Bureau (PRB) estimated a total of 54.2 million people between the ages 10-24 years in 2006 and is projected to be 64.8 million by the year 2025 (70).

Transition from childhood to adulthood is characterized not only by physiological and psychological development of the individual but also by the reproductive maturity (71). During this phase of life, a young person's social, economic, legal status is also transformed, moreover it is also a time of gender differentiation (72). During the transition period, adolescents' who are not yet adult; feel that they are capable to handle situation of daily life and display behavioral changes, which make them exposed to various risks including health risks (73-75). Furthermore lack of awareness and poor access to information about health matters, make the adolescents vulnerable to STIs including HIV/AIDS (76-78).

According to UNAIDS estimates, the prevalence of HIV/AIDS among the population of men and women aged 15-24 in Pakistan is about 0.1%, whereas there were 5000 deaths among adults and children due to AIDS in 2007 as compared to 1900 deaths in 2001 (30). The first outbreak of HIV infection among injecting drug users (IUDs) was reported in a small town of Sindh province in Pakistan in 2003 (79). Surveillance data of Sindh AIDS Control Program, Pakistan suggests that HIV infection is rapidly increasing among injecting drug users (IDUs) and has reached 9% in 2004-5 indicating that the country has however entered the 'concentrated epidemic' stage for HIV/AIDS i.e. the HIV prevalence in high-risk subpopulations is 5% or higher (80). The infection can spread to the general population, through a '*bridging population*', who has contact with both high risk population and the general population (81, 82).

Commercial sex is prevalent in major cities and on truck routes (83). Behavioral and mapping studies in few large cities found a sex worker population of 100,000 with limited understanding of safe sexual practices (83). It is estimated that 40 percent of the 1.5 million annual blood transfusions in Pakistan are not screened for HIV (83). A surveillance report on HIV/AIDS in 2006-7 revealed that male sex workers including transvestites or *hijra* sex workers are emerging as the second highest risk group in Pakistan after IUDs (84). According to same report the prevalence of HIV among female sex workers was very low i.e. only one was positive for HIV out of 4,639 tested (84). Furthermore this high risk sub-population of IDUs and commercial sex workers are more concentrated in larger cities (85). This might pose serious threat to HIV epidemic specially among young population (79, 80). A survey was conducted in 2007 on selected STIs (Syphilis, gonorrhea, Chlamydia, genital herpes and HIV) among adult men (16-45 years) in major cities of Pakistan. It revealed a prevalence of 8.5% (including all the STIs) in the city of Karachi which was highest among all the other cities (86).

Youth in Pakistan experience many challenges; often related to their health as they have poor knowledge about their sexuality and consequences of their sexual behaviors. They have high risks of pregnancy and abortion; and are victims of sexual violence, exploitation and discrimination. This makes them more vulnerable to STIs including HIV/AIDS. High-risk sexual behaviors are prevalent among male drug users in Pakistan, and awareness of transmission risks are also low (87). Furthermore, Afghan immigrants to a higher extent use drugs and share needles; they are often illiterate, unemployed and have poor awareness about HIV/AIDS, which increases the risk of the general population of getting HIV/AIDS transmission (88).

The existence of a number of high risk sexual behaviors, internal and external migration, high level of injecting drug use and poor health and social services are some of the factors increasing the risk of HIV epidemic in the country. A large number of young people are living in extreme poverty; economic crises and broken homes. Physical and mental abuse increases their risk of sexual exploitation, unsafe sexual practices and also contracting HIV/AIDS.

Government of Pakistan initiated National AIDS Prevention and Control Program (NACP) in 1987 to combat HIV/AIDS epidemic in the country. Its objectives are the prevention of HIV transmission, safe blood transfusions, reduction of STI transmission, establishment of surveillance, training of health staff, research and behavioral studies, and development of program management (83). Notwithstanding, Pakistan is a signatory of conventions including International Conference on Population and Development (ICPD) 1994 (38), the Beijing Conference 1995 (89) and the Eight Millennium Development Goals (MDGs) outlined at the UN Millennium Summit 2001(35). All of these have emphasis on the issues of sexual and reproductive health of young people. However the HIV/AIDS prevention strategy depends on the twin effort of medical care and social support to those living with HIV and targeted prevention for those who are vulnerable to HIV infection (66).

Table. 2 Estimated number of adults and children living with HIV in Pakistan
(These estimates include all people whether or not they have developed symptoms of AIDS)

Category	2001	2007
Adult rate (15-49 years) (%)	<0.1%	0.1%
Low estimate	...	<0.1%
High estimate	0.1	0.2
Adults (15 years and above) and children	51,000	96,000
Low estimate	37,000	69,000
High estimate	79,000	150,000
Adult (15 years and above)	50,000	94,000
Low estimate	36,000	68,000
High estimate	77,000	150,000
Women (15 years and above)	13,000	27,000
Low estimate	9,100	19,000
High estimate	21,000	42,000

Source: UNAIDS/WHO 2008(66)

Total number of adults and children living with HIV has almost doubled from 2001 to 2007. Similarly women (15 years and above) followed the same pattern. The prevalence (15-49 years) was 0.1% in 2007 (Table2). However moving into concentrated epidemic stage for HIV/AIDS required much conjoined efforts.

2.3 Gender roles and responsibilities

"No nation can rise to the height of glory unless your women are side by side with you; we are victims of evil customs. It is a crime against humanity that our women are shut up within the four walls of the houses as prisoners. There is no sanction anywhere for the deplorable condition in which our women have to live."

(A paragraph from a speech by the founding father of Pakistan Muhammad Ali Jinnah in 1944 - taken from the US Library of Congress report "Pakistan - A Country Study")

Gender inequality is however observed in all spheres of Pakistani culture. It stems from son preference culture (90-92). Parents put more stress to educate the male child than the female child (93), leading to much higher net primary school enrollment ratio for the males as compared to females (Table 1). In Pakistan, a woman's status is considered lower than that of her male partner and she participates least in the decision making and are influenced by the male members of the family in all health related matters (94). In the wake of the HIV/AIDS epidemic, gender inequality in the form of exploitation of women is one of the key factors in spreading HIV infection (95).

Traditionally, women are responsible for cooking, cleaning and taking care of the children, so they spend major part of their lives within the house. Men are considered as the head of the household and the main decision maker and are responsible to earn money and support the family. Only a very small fraction of women is employed and some of the women especially in rural areas are involved in home based tasks like embroidery and handicrafts as a means of earning money. In some orthodox families and culture, females leaving the household to acquire education or to find a job are being alienated from the society and blamed for family disgrace. According to Human Development Report 2007-8, Pakistan ranks at 125 position out of 177 countries in gender-related development index (GDI) (9).

Culturally women are considered to uphold the family honor, which limits their mobility, places restrictions on their behaviors and limit their contact with the men, leading to a much segregated society. At the extreme, there is also persistence of 'honor killings' in Pakistan, where homicidal acts are committed primarily against women (96). In some of the cultures in Pakistan women observe '*purdah*' (covering the face and the body). '*Purdah*' is practiced in various ways depending on the social class and family values. Those of higher socio-economic status often do not observe '*purdah*'. Marriages in the Pakistani culture are generally arranged by the parents, whereby the parents ask their daughters to approve of the selected becoming husband. Despite this traditional setting there are very few instances where both men and women take decision to enter into marriage.

Social customs, lower literacy, poor infrastructure, early marriages, lack of employment and other opportunities have hampered the inclusion of women in the work force to contribute to the economic growth of the country. Nevertheless, one of the millennium development goals is to promote gender equality and to empower women (35). Without integrating general education, health education and social sector development, it will be difficult to achieve the millennium development goals as these three are strongly interrelated and interwoven (97). This places a responsibility on the policy level in the first place and is important for the future of the younger generations.

Although societal norms and ingrained behaviors certainly play a role in maintaining gender inequalities. With the introduction of modern communication techniques, effects of media and increased awareness among the young people, a change in young people's attitudes could be expected.

2.4 Educational status

Education remains inequitably distributed among different classes and regions in Pakistan. Educational attainment is the key component not only for the individual development but also for the country's prosperity at large. According to the latest census (1998) conducted in Pakistan, 44% of adults are able to read and write (32% females, 55% males), and these figures are much lower for the rural areas (61). Pakistan Integrated household survey 1998-99 revealing that there is disparity in the literacy rates not only across the various provinces in Pakistan but gender differentials were also observed (98). There is a slight improvement, according to UNESCO report 2006; the adult literacy rates in Pakistan is 50% (males 62% and females 38%) (99). Moreover Pakistan shares about 6.2% of the global illiterate population while the government spends only 2.1% of GNP on education (99).

There are four distinct levels within the education system in Pakistan. The four levels of education are; *Primary* i.e. Grade I-V (completed by 11-12 years of age), *Secondary* i.e. Grade VI-X (completed by 16-17 years of age), *higher secondary or intermediate* i.e. Grade XI-XII (completed by 18-19 years of age) and *graduate and post-graduate or higher* i.e. Grade XIII-XVI (entry by the age of 20-21 years). Education does not always begin in a timely fashion so these age brackets are often delayed by a couple of years. In addition, there is British system of education in some of the elite schools in the country, which gives a 'General Certificate of Education' or GCE, is a secondary-level academic qualification. It is often divided into two levels; Ordinary level (O-level-completed by 16 years of age), equivalent to secondary level of education and Advanced level (A-Level-completed by 18 years of age), equivalent to higher secondary level of education. This British system of education is managed by the British examination board. Up to the primary level of education both boys and girls go together but are separated for higher levels of education. With the exception there are some private schools where both boys and girls get the education together till the higher secondary level; and even beyond that there are professional colleges and institutes with a co-education set-up, but this is not the rule.

Despite various initiatives from the Government in the form of different policies and plans like, National Education Policy 1998-2010, Education Sector Reforms 2002-2006, Education For All-National Plan of Action 2001-2015 there is still much to be done (100). There are many reasons for the low literacy level in Pakistan like, poor infrastructure, limited resources, non-availability of teachers especially female teachers, taboos against female education, cultural issues and political commitment. The private sector has contributed well in the provision of basic education and these are mostly concentrated in urban areas. Moreover there is a dire need to involve communities and participation from the non-governmental sector to strengthen the education system in Pakistan as educational attainment is the driving force behind other improved conditions and opportunities for younger generation of today.

2.5 Rationale for the study

The largest-ever cohort of a younger generation in Pakistan is facing health problems. Increased globalization, rapid communications and upcoming HIV/AIDS epidemic, have possibly shifted the scenario, where health needs and priorities of the young people have changed, and this needs to be investigated. HIV/AIDS is spreading rapidly, and it not only affects the health status but in addition has its economic implications. The HIV/AIDS epidemic needs to be studied within social context, as highlighted in UNAIDS report 2008 i.e. action is needed to address the social determinants of HIV (30). Furthermore the WHO report from 2008 emphasized the global action on the social determinants of health with the aim of achieving health equity (101). Some studies at national level have been conducted on adolescents and youth focusing HIV/AIDS in Pakistan (102, 103). This research has not only identified the risk groups but also explored the underlying factors related to HIV/AIDS spread and prevention.

This study has focused on both males and females from 17-21 years of age, which is referred to as 'young adults' in this thesis. The reason to focus on this age group was two fold, firstly; as Reproductive Health issues are considered a sensitive topic in the local setting, there was an urgent need to approach this age group. Secondly we intended to assess individuals who had completed their secondary education i.e. being at least 17 years and up to their entrance to university or technical college for graduate studies, which is 20-21 years. The reason was not only to assess their educational status but also their views about Reproductive Health issues just before their entry into adulthood. 'Emerging adulthood' is proposed as a new concept for the period from late teens through the twenties, with a focus on people between 18-25 years, which is the age for exploration and identity development (104). The current study is within this age bracket. Considering the fact that the HIV/AIDS epidemic is on rise in Pakistan, it makes it extremely important to assess and explore young people's knowledge and perceptions of reproductive health matters and of the HIV/AIDS epidemic for risk group identification and later policy formulation.

3. THEORETICAL FRAMEWORK

Before I describe the framework for this thesis, let me share some information about my background. When I was very young, I was dedicated and mentally prepared to become a medical doctor. After my graduation, I started practicing and realized the misery and gloomy situation of people suffering from various health problems, most of them being preventable. This actually shifted my interest towards serving the population rather than the individual patient, i.e. I took the population as a '*patient*' (105). So I decided to work in the field of public health.

Later, I did Masters' in the subject of 'Epidemiology' and joined Aga Khan University in the Department of Community Health Sciences as a faculty. There, I was involved in teaching Public Health concepts to undergraduates and Public Health research. The growing number people in Pakistan and their vulnerabilities to reproductive health problems developed my interest to work in the Reproductive Health program within the Department of Community Health Sciences.

In the Reproductive health program, my main research interest was adolescents' reproductive health and more specifically young people's perceptions of knowledge, and attitudes to the HIV/AIDS epidemic. In the meantime I continued my struggle to pursue for doctoral studies as I wanted to excel myself in the domain of public health. I was fortunate to get enrolled in the PhD program at the Department of Public Health Sciences, Division of Global health (IHCAR) (International Health at that time) at Karolinska Institute, in Stockholm Sweden. There I developed my PhD project on Reproductive Health issues of the younger generation in Pakistan. My training during the doctoral program further energized my passion to serve in the field of public health with more expertise. Interestingly, this thesis is being defended in Sweden which of course is a mile stone in my life.

3.1 Public health

This thesis is grounded in public health science. One of the oldest definitions of Public Health was made by Winslow and it reads "Public Health is the science and art of preventing disease, prolonging life and promoting health and efficiency through organized community effort" (106).

This description points at several important parts in the public health concept; it is a science in the sense that it is evidence-based but it is also described as an art, understood as relying on the capacity and capability of public health workers to reach out to populations for mutual understanding towards improved health (my interpretation). Finally, it places responsibility on societal organizations to offer health enhancing environments for the individual to be able to choose a healthy lifestyle. There are some obligations to the society within the public health framework, such as provision of education both for boys and girls, health education, sexual and reproductive health rights and also gender equality legislation.

To summarize, public health is focused on population health more than on the health of individuals. It investigates risk factors for ill health with the aim to identify risk groups for targeted interventions. The social determinants of health and disease are focused but biological factors are also important. Health is closely linked to the social and gender stratification in society and the gaps in health status is widening with increased social and gender inequities.

3.2 A psychosocial model for understanding health and disease

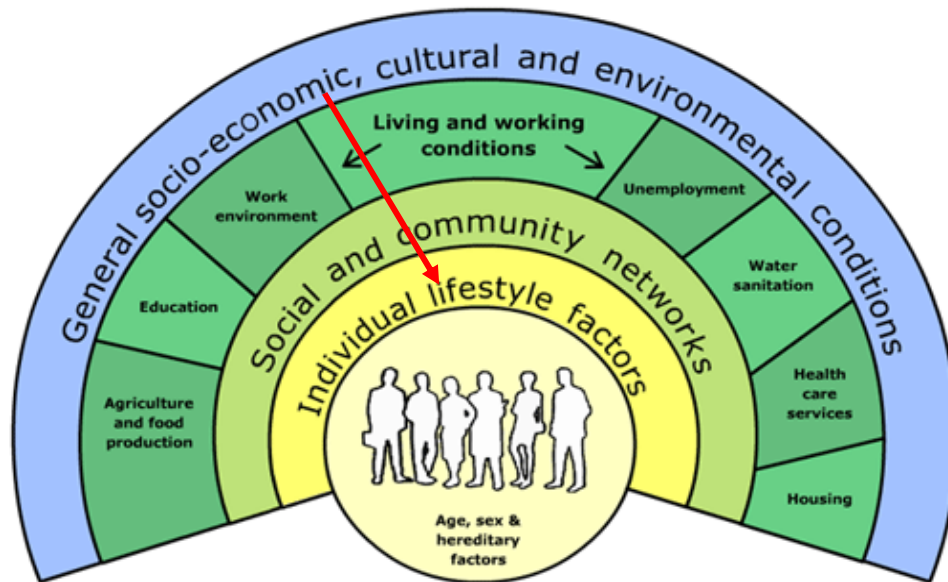
There are different models for how psychosocial factors and overall life circumstances intersects with health and most of these models are built on the four layers of societal organization. One of these models is developed and described by Dahlgren and Whitehead; a social ecological theory of health (107). This is a general framework describing the social determinants of health at various levels of societal organization (fig.2). Overall, there is a major structural environment (outer layer) indicating the importance of socioeconomic conditions such as political, economic and social features in a specific country or region. In this layer is also the notion of 'culture' which describes the 'unwritten' laws and regulations prevailing in a specific context. Gender is a powerful component of the structural level, belonging to 'culture', as it lays down principles for relationship patterns between men and women including a power gradient.

In the next layer there are material and social conditions in which people live and work, determined by various sectors such as education (study I), employment (study IV), health care services (study III and IV). Next inner layer is the mutual social support from family, friends and local community to join together and strengthen their defense against health hazards. Finally, there are actions taken by individuals i.e. their attitudes and life style factors (study II and III). The age, sex and genetic make up of each individual also plays a part but these are fixed factors. The outer layer influences all the others (indicated by the red arrow in the fig. 2)

3.3 Gender perspectives

Gender inequalities of health originate in the traditional society due to power differentials; where definitions of health status and traditional medical practices all reflect the subordinate social status of women (108). The lack of decision-making power, inadequate access to health care services, early marriages and childbearing exposes women to poor health status (108). Gender is a powerful social determinant of health cutting across all layers of societal organization, so to plan any new intervention to improve men's and women's health, gender analysis should be undertaken to identify the different life circumstances (roles/responsibilities) of men and women. Gender analysis explores and highlights the relationship of men and women in the society and the inequalities in these relationships (11).

The Main Determinants of Health



Source: Dahlgren and Whitehead, 1991.

Fig 2. Theoretical Framework – (The red arrow is added to illustrate the relation between the four layers of societal organization)

3.4 Methods used

Epidemiology is the basic principle within public health, and can be defined as “The study of the distribution and determinants of health-related states or events in specified populations and the application of this study to control of health problems” (109). For this thesis, both quantitative and qualitative methods were adopted. A quantitative study starts with a well defined hypothesis and data is collected through well defined instruments from a large number of randomly selected subjects. Biostatistical methods are employed for data analysis and the result should be applicable to a wider population. However quantitative studies may miss contextual detail (110). The aim of the quantitative study is to classify features, count them, and construct statistical models in an attempt to explain what is observed, which helps to identify risk groups (111).

In contrast, qualitative methodology investigates feelings, perceptions, emotions, and experience in a selected population with the main aim to find new insights into a concept or a problem. Qualitative studies require a small number of participants selected purposively and is designed to find emerging theories (110). Unlike quantitative methods, such findings cannot be generalized to a wider population but give rise to new hypotheses that can be further tested in a quantitative study (110). In short, the quantitative approach deals with numerical data, whereas the qualitative approach deals with data comprising of words (interviews), pictures etc.

This research was designed to capture the factors and various aspects which describe HIV/AIDS among younger generation in Pakistan. I was inspired by the framework from Dahlgren and Whitehead (107) which has been adopted to analyse the determinants of HIV/AIDS spread in this research.

It is important to realize that for any health policy goal, strategies can be devised at any of the four policy levels as depicted by Dahlgren and Whitehead. We started with the quantitative design (study I and II) and followed it up by qualitative methods i.e. FGDs (study III and IV). The qualitative part not only served to explore these sensitive topics in contextual detail but triangulation of methods also served to complement the study findings (110).

4. STUDY AIMS

4.1 Main Objective

The overall aim of this thesis is to explore and describe young adults' knowledge and perceptions of sexual and reproductive health with special reference to HIV/AIDS, future gender roles and implications for health behaviors and prevention in Karachi, Pakistan.

4.2 Specific Objectives

1. To assess the risk factors associated with involuntary school/college dropout and the implications for awareness about HIV/AIDS and STDs among young males and females (17-21 years) in Karachi, Pakistan. (I)
2. To assess the level of knowledge and awareness of the HIV/AIDS epidemic among young males and females, aged 17-21 years, in Karachi, Pakistan, focusing on modes of spread and preventive measures. (II)
3. To explore the knowledge, attitudes, beliefs and perceptions related to HIV/AIDS and family planning among young males and females (17-21 years), in urban Karachi, Pakistan. (III)
4. To explore the perceptions and expectations of young males and females (17-21 years) regarding their life prospects and gender roles, and their implications on health behaviors, in Karachi, Pakistan. (IV)

5. METHODS

5.1 Study team

These studies were carried out by a research team comprising of the principal investigator [PI] (myself, a Pakistani medical doctor, with a public health background), a nurse educator experienced in qualitative research, two Swedish global public health researchers Gunilla Krantz (main supervisor) and Eva Johansson (co-supervisor) who supervised the project at all phases. This broad composition of the research team contributed different perspectives and visions to the study. Moreover, project staff comprised of field manager, field coordinator, data collectors, a female moderator and note takers. All studies were conducted in city of Karachi, Pakistan (Table 3).

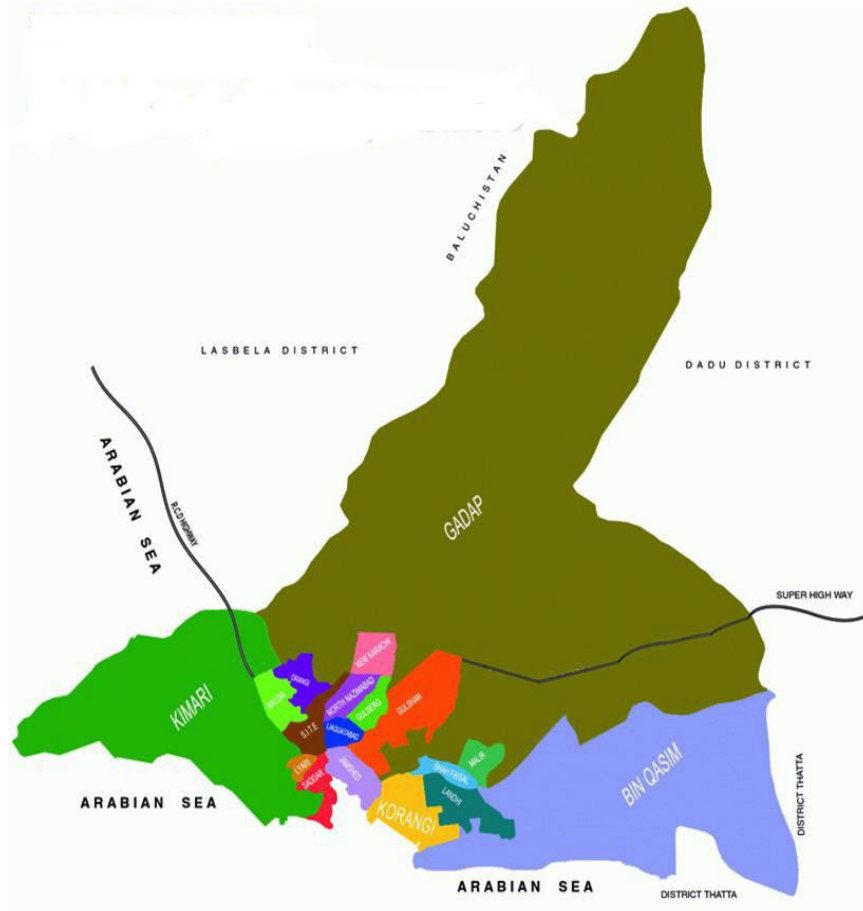
Table 3. Overview of the studies.

<i>Paper</i>	<i>Study</i>	<i>Study population/ Participants</i>	<i>Methods</i>	<i>Time period</i>
I	Reasons for school/college dropout among young males and females and implications for awareness about STDs and HIV/AIDS in Karachi, Pakistan Int J Behav Med Jan 28.	Males and females, 17-21 years. (N=1,650), M=826, F=824.	Population based cross-sectional study	June-Aug 2006
II	Level of knowledge and awareness of the HIV/AIDS epidemic among young males and females, in Karachi, Pakistan. BMC Infect Dis2009;9:38.	Males and females, 17-21 years. (N=1,650), M=826, F=824.	Population based cross-sectional study	June-Aug 2006
III	Exploring knowledge, attitudes, beliefs and perceptions about HIV/AIDS and family planning among young males and females in Karachi, Pakistan (Submitted)	Purposeful selection of Males (n=22) and females (n=20), 17-21 years.	Focus group discussions	Dec 2008
IV	Young adults' views on life prospects and gender roles and its influence on health behaviour: an exploratory qualitative study from Karachi, Pakistan (Submitted).	Purposeful selection of Males (n=22) and females (n=20), 17-21 years.	Focus group discussions	Dec 2008

5.2 Study setting: Karachi, Pakistan (fig. 3)

The city of Karachi is located in southern Pakistan in the north of Arabian Sea. Culturally it is the most cosmopolitan city of Pakistan, as it comprises of people from different ethnic background. The city of Karachi comprises of 18 different towns (Table 4) based on administrative units; each town is further divided into union councils, making a total of 178 union councils altogether (65)

Fig. 3 Towns of Karachi (18)



The participants of this study were selected from the city of Karachi, including all the 18 towns (except for FGDs). The study population is well described below in respective sections for quantitative and qualitative studies.

Table 4. Towns of Karachi

Baldia Town	Bin Qasim Town	Gadap Town
Gulberg Town	Gulshan Town	Kiamari Town
Korangi Town	Jamshed Town	Landhi Town
Liaquatabad Town	Lyari Town	New Karachi Town
North Nazimabad Town	Malir Town	Orangi Town
Saddar Town	Shah Faisal Town	SITE Town

5.3 Quantitative studies

5.3.1 Data collection (study I and II)

This was a population-based cross-sectional study of males and females aged 17-21 years, and the data was used for study I and II. A questionnaire based on existing validated instruments from national surveys of reproductive health of youth in Pakistan was used (102, 103). The questionnaire was supplemented with context-specific items to assess the knowledge and awareness of behaviors related to HIV/AIDS. The questionnaire also contained items on socio-demographic and psychosocial conditions. The same questionnaire was used for males and females and was pre-tested prior to the data collection.

The sample size was 1,650 with the assumption that 50 and 57 per cent of the males and females respectively would have insufficient knowledge of the modes of spread of HIV/AIDS (112, 113), applying a 95 percent confidence level, a power of 80 per cent and including an equal number of males and females.

A multi-stage cluster sampling design was used to identify the respondents. The city of Karachi comprises of 18 towns (administrative units), further divided into union councils. The calculated sample size (1,650) was then divided in proportion according to the population size of the towns, as reported in the last census of 1998. One union council from each of the towns was randomly selected and further divided into blocks, each comprising of 50 households. Proportionate numbers of blocks were chosen at random from a list of all the given blocks. Finally, 10 eligible households with one or more persons aged 17-21 years were chosen using systematic sampling (every fifth household from a total of 50 households in the selected block). In all, 165 blocks were chosen and, by taking 10 households from each block, the desired sample size was reached.

If there was more than one eligible person in the household, one was randomly chosen. Equal numbers of males and females were selected. There were 10-15 percent refusals in some of the blocks. This was taken into account by moving to the next household till the desired sample was obtained.

In order to facilitate communication the data were collected by a team of male and female interviewers of about the same age as the male and female respondents. The interviews were conducted in their homes, ensuring that no other person could overhear the conversation. Six interviewers (three males and three females) were trained in a two-day workshop (classroom discussion sessions) to ensure a full understanding of the instrument and its purpose. The training was conducted by the principal investigator, supported by a field manager and a field supervisor, who together developed the instruction manual for the interviewer training. The data collection was carried out during June and August 2006.

5.3.2 Analysis (study I)

Dependent variable

School/college dropout rate was assessed by asking the participant, “Are you currently enrolled in a school/college?” if the response was “no” respondents were asked, “What was the main reason for you to leave school/college?” If any reason was given indicating that discontinuing education was involuntary, i.e. due to circumstances beyond the respondent’s control, he/she was considered to be a dropout, as opposed to those who were still attending or had left voluntarily.

Independent variables

Various socio-demographic variables were used as independent variables. Socio-economic status (SES) was based on household assets such as toilet facility, source of drinking water, refrigerator, TV or computer. Initially, the assets were valued according to the average current price on the market and subsequently scored based on those values. SES was then dichotomized at the median (Rs.20, 000/- equal to US\$340/-) into high-middle and low SES. Since only 23% of the study subjects reported any monthly income, we were not able to use these figures.

Age was classified in two groups, 17-18 and 19-21 years of age. Working status was defined as paid employment/voluntary work, as opposed to no paid employment/voluntary work, the latter category including students. Marital status was defined as ever having been married, as opposed to being unmarried. Residential status was classified as permanent or migrant; ethnic groups native to the city of Karachi at the time of independence (1947), including migrants from India were classified as permanent. Family type was dichotomized into ‘nuclear families’ (parents living only with their children), as opposed to ‘extended families’ (grandparents, grandchildren or in-laws are household members).

Three items were used to assess the awareness of STDs and HIV/AIDS, the first two were yes-or-no questions e.g. “Have you heard about sexually transmitted diseases?” and “Have you heard about HIV/AIDS?” The concept of STDs was thoroughly explained to ensure the understanding of all the participants. The third, open-ended, question inquired about ‘how STDs spread?’ Participants were asked to make suggestions, which were then judged as correct or incorrect based on scientific reasoning. If the participant gave at least one correct response it was counted as ‘some awareness’, whereas yielding exclusively incorrect responses was labeled as having ‘poor awareness’. Awareness about specific modes of spread of HIV/AIDS was not assessed.

Statistical procedures

Bivariate and multivariate logistic regression was used to investigate associations between socio-demographic factors and dropping out of school/college. Analyses were

performed separately for males and females; odds ratios (OR) with 95% confidence interval (CI) were used as a measure of association. Those socio-demographic and psychosocial variables that displayed statistically significant associations in the bivariate analyses were included in the multivariate analyses, which were age-adjusted. Working status was not included in the logistic regression model as it was considered an outcome of dropping out of school/college. The chi-square test was used to detect the respective differences between the gender in awareness of STDs/ HIV/AIDS, both among dropouts and non-dropouts. The data were double entered into Epi Info version 6.04d (112). Ten percent of the questionnaires were checked randomly to look for any error in the data entry. SPSS version 15.0 (114) was used for the data analysis.

5.3.3 Analysis (study II)

Dependent variable

Two open-ended questions assessing the knowledge of spreading and preventive strategies of HIV/AIDS; ‘What are the various modes by which HIV/AIDS is being spread?’ and ‘Name a few strategies through which an individual can prevent himself/herself from getting infected with HIV/AIDS’? The responses were assessed as ‘correct’ or ‘incorrect’ by the researchers based on scientific reasoning. Each of the two variables was then coded into four categories, i.e. ‘poor knowledge’ (no correct answer), ‘some knowledge’ (1 correct answer), ‘good knowledge’ (2 correct answers) and ‘very good knowledge’ (3 or more correct answers). A composite variable based on the two items was created and defined at three levels, i.e. ‘poor knowledge’ (both variables had only incorrect responses), ‘some knowledge’ (exactly one variable had at least one correct response) and ‘good knowledge’ (both variables had at least one correct response). For multivariate analyses, the composite variable was dichotomized into ‘poor knowledge’ as opposed to ‘some knowledge’ and ‘good knowledge’ taken together.

Independent variables

Various socio-demographic variables were used as independent variables. Educational level was defined as the number of years of education and dichotomized into those with ≥ 6 years of schooling and those with < 6 years of schooling. Enrolment at school/college was classified as enrolled or not enrolled. Whereas other independent variables such as age, working status, marital status, residential status, family type and SES were same as defined for study I.

Statistical procedures

Cronbach’s alpha coefficient was used to measure the internal consistency of the items defining the dependent variable i.e. knowledge of HIV/AIDS; it was 0.75. Odds ratios were used to estimate associations between socio-demographic and psychosocial factors and knowledge of HIV/AIDS. Multiple logistic regression analyses further identified different tentative models of association and possible confounding factors. Only those

variables that displayed statistically significant associations in the bivariate analyses were entered one by one. Marital status was only marginally significant in the bivariate analysis for females, but it was included in the logistic regression models due to its inherent importance. The analyses were performed separately for males and females. The data were double entered into Epi Info version 6.04d (112). Ten per cent of the questionnaires were checked randomly to look for any error in the data entry. SPSS version 15.0 (114) was used for the data analysis.

After conducting two quantitative studies, I felt that more in-depth knowledge was needed to further explore the knowledge about HIV/AIDS and to understand gender roles and life prospects of young adults in detail.

5.4 Qualitative studies

5.4.1 Data collection (study III and IV)

In order to capture as many aspect and views of young adults as possible, participants were chosen purposively (115), from three different segments of the city of Karachi, representing different social strata. The inclusion criteria were hereby set to include males and females of the age group 17-21 years of age, being unmarried and to belong to different social strata.

The first group belonged to lower socio-economic strata and was identified with the assistance of the community coordinator working in the primary health care centre of the same vicinity. The second group belonged to the population from lower middle social strata and was identified with the help of the research assistant in this study; whereas the third group from upper middle social strata was identified by the research coordinator of the study through the community office in that area. The purposive selection of these groups was made with the consensus of Pakistani research team members of this study. The characteristics of the FGDs are presented in Table 5.

Altogether, six focus group discussions (FGDs) were conducted, two from each social stratum, all being sex specific, which facilitated open discussions. All the FGDs were conducted in the local language Urdu. The average number of participants in each FGD varied from 6-8. Discussions were held at a venue identified by the members of the research team according to the convenience of participants. The participants from lower social strata were interviewed at the Health centre; lower middle social strata were interviewed at one of the participant's home, whereas and upper middle social strata were interviewed at the Community office (Table 5). Consent was obtained from all the participants, who were briefed about the study objectives and further informed about the discussions to be tape recorded and how confidentiality of the data would be maintained. The data were collected in December 2008.

A topic guide was used to guide the discussions (110) covering the specific areas such as i) values and norms about HIV/AIDS, its spread and prevention ii) perceptions and

awareness about family planning (study III). Furthermore, other areas were also explored iii) goals in life and possible constraints in achieving these goals and views about education; and iv) views about future gender roles in the society, including male tasks and females tasks (study IV). The topic guide was initially pilot-tested and revised accordingly. The FGDs with males and females were facilitated by a male moderator, SFH (PI) and a female moderator (co-researcher), respectively. Note taking and tape recording of the FGDs were undertaken by the research assistants. FGDs for males were carried out by a male moderator and a note taker, whereas FGDs for females were carried out by a female moderator, a note taker and an observer. Each FGD lasted 70-90 minutes. The tapes were transcribed verbatim in the local language (Urdu), supplemented by notes, and later translated into English by the research coordinator. A third person re-examined the translations. Finally the [PI] validated all transcribed and translated text from the notes and the recordings.

5.4.2 Data Analysis (study III and IV)

The transcripts from the FGDs were analysed using qualitative content analysis. Both ‘manifest content’ (visible, obvious components) and ‘latent content’ (underlying meaning) of the text were analysed (116).

As a first step, complete transcripts were read several times by the main researcher (SFH) in order to fully understand the views of the participants for immersing it in the data. ‘Meaning units’ that mirrored statements, were then identified as per topic guide by highlighting phrases in the transcripts which were ‘condensed’ and thereafter ‘codes’ were identified from the ‘condensed meaning units’ without losing the context (116). Finally, three of the researchers, (SFH, EJ, and GK) independently of each other reviewed the codes and grouped similar codes into sub-categories and categories. The latent content was then identified and expressed in theme and sub-themes after systematically analyzing the commonalities, variations and disagreements of the three researchers.

Table 5: Characteristics of the focus-group participants, number of participants and venue for focus group discussions.

Position	Gender	No.	Socio economic status (SES)	Venue
G1	Males	7	Low SES	Health centre
G2	Females	8	Low SES	Health centre
G3	Males	8	Lower middle SES	Participants’ home
G4	Females	6	Lower middle SES	Participants’ home
G5	Males	7	Upper middle SES	Community office
G6	Females	6	Upper middle SES	Community office

5.5 Ethical considerations

The participants of the respected studies were well informed about the objectives of the quantitative and qualitative studies and their associated benefits to the younger population. In Pakistan's social context, discussions about reproductive health issues is a sensitive topic, so great care was taken in training the interviewers not to cause any argument or controversy while approaching the respondents. Participants were also ensured about the confidentiality and were briefed that their participation in this study was voluntary and that they had full right to withdraw at any stage during the study. Data collection with males and females for the quantitative study was ensured to be carried out in privacy by male and female interviewers respectively. Similarly, a male and a female moderator conducted the FGDs for males and females groups respectively. In the FGDs, participants were asked not to disclose their personal experiences and therefore general perceptions were sought. Ethical approval for the study was obtained from the Aga Khan University Ethical Review Committee (AKU-ERC). Informed consent was obtained both from the respondents and their parents as suggested by AKU-ERC.

6. RESULTS

This section present results from both quantitative and qualitative studies.

6.1 Quantitative studies (study I and II)

Results from study I are based on 1,650 study subjects (males 826, females 824) (Table 6). The results from study II are based on responses from 1,260 participants (males 605, females 655) out of the total population, i.e. only those who have heard about HIV/AIDS (Table 7).

The socio-demographic composition of the study participants mirrored the general composition in urban Karachi. Females were illiterate to a higher extent than males (13% vs. 8.6%, (p-value 0.004; $\chi^2 = 8.26$, df =1), but slightly more females had completed higher secondary education and above than males (23.8% vs. 20.8%, p-value 0.148; $\chi^2 = 2.09$, df =1). Furthermore, 7.2% of the participants had ever been married; all were females (p-value <0.001; $\chi^2 = 114.79$, df =1). Slightly more females than males were members of low SES families (59.6% vs. 55.9%, p-value 0.132; $\chi^2 = 2.26$, df =1) (Table 6).

6.1.1 Reasons for school/college dropouts among males and females (study I)

Initially we looked for the educational status of the study participants. The participants mentioned various reasons for school/college dropout. Twice as many females (43.2%, n=356) as males (21.4%, n=177) had to leave school/college before graduation for reasons other than lack of interest. The reasons given for dropping out of school/college indicated gender differences. The majority of the males reported either that the family could not afford the expense or that they had to contribute to the family income, i.e. economic reasons. Similarly, females also had to leave due to parents not being able to afford expenses, however parental pressure, marriage and household duties also constituted a reason for leaving school. We looked for the risk groups for school/college dropouts.

The multivariate analyses were performed separately for males and females to identify the risk groups for school/college dropouts. Among males, migrant residential status (adjusted odds ratio, AOR, 3.66, CI 2.53-5.30), living in an extended family (AOR 2.87, CI 1.48-5.56) and low SES (AOR 3.35, CI 2.19-5.12) remained statistically significant in the final model. Among females, being married (AOR 8.28, CI 4.57-15.03) turned out to be the strongest factor associated with dropping out of school/college, but migrant residential status (AOR 1.77, CI 1.28-2.44), and low SES (AOR 2.29, CI 1.66-3.18) were also statistically significant. Living in an extended family (AOR 1.38, CI 0.98-1.93) was marginally statistically significant factor for the females in the final model. There were no correlations exceeding 0.4 between independent variables in any of the models (Cramer's V).

Table 6. Socio-demographic and psychosocial characteristics, with gender differences indicated by p-values. N=1,650 (males=826, females=824).

Characteristic	All		Males		Females		p-value
	n	%	n	%	n	%	
Age (years)							
17-18	685	41.5	339	41.0	346	42.0	0.695
19-21	965	58.5	487	59.0	478	58.0	
Educational level							
Illiterate	178	10.8	71	8.6	107	13.0	0.001
Primary (Class I-V)	106	6.4	46	5.6	60	7.3	
Secondary (Class VI-X)	998	60.5	537	65.0	461	55.9	
Higher secondary (XI-XII)	317	19.2	152	18.4	165	20.0	
Graduate	51	3.1	20	2.4	31	3.8	
Years of schooling							
< 6	284	17.2	117	14.2	167	20.2	0.001
≥ 6	1366	82.8	709	85.8	657	79.8	
School/college attendance							
Continued education	815	49.4	473	57.3	342	41.5	<0.001
Dropout for different reasons	533	32.3	177	21.4	356	43.2	
Dropout due to lack of interest	302	18.3	176	21.3	126	15.3	
Marital status							
Unmarried	1532	92.8	823	99.6	709	86.0	<0.001
Ever married	118	7.2	3	0.4	115	14.0	
Current working status							
Student	824	49.9	476	57.6	348	42.2	<0.001
Household work	310	18.8	0	0.0	310	37.6	
Unemployed	253	15.3	153	18.5	100	12.1	
Paid job	189	11.5	155	18.8	34	4.1	
Own business	44	2.7	36	4.4	8	1.0	
Unpaid job	30	1.8	6	0.7	24	2.9	
Working status							
Non-working (including student)	1387	84.1	629	76.1	758	92.0	<0.001
Working	263	15.9	197	23.9	66	8.0	
Residential status							
Permanent	1131	68.5	604	73.1	527	64.0	<0.001
Migrant	519	31.5	222	26.9	297	36.0	
Family situation							
Extended	333	20.2	48	5.8	285	34.6	<0.001
Nuclear	1317	79.8	778	94.2	539	65.4	
Socio-economic status							
High-middle	697	42.2	364	44.1	333	40.4	0.132
Low	953	57.8	462	55.9	491	59.6	
Television in the home							
Yes	1486	90.1	714	86.4	772	93.7	<0.001
No	164	9.9	112	13.6	52	6.3	
Computer in the home							
Yes	361	21.9	212	25.7	149	18.1	<0.001
No	1289	78.1	614	74.3	675	81.9	

Finally, few screening questions were asked regarding the knowledge and awareness about STDs and HIV/AIDS to assess possible gender differences and differences between those who did or did not involuntarily dropout of school/college. The males who dropped out of schools/colleges were found to be considerably less aware of the mechanisms related to HIV and STDs than the males who continued education. The awareness among the females did not differ significantly whether they were dropouts or not. Interestingly, when male and female dropouts were compared, the females were generally better informed. Of the dropouts, only 5.6% of males and 14% of females had heard of STDs and only 3.4% of males and 9.8% of females had some awareness of the modes of spread of STDs. Furthermore, 57.6% of the dropout males and 80.1% of the dropout females had heard of HIV/AIDS.

After the screening of the participants' knowledge on HIV/AIDS and STDs, we wanted to assess their knowledge on this subject more comprehensively and identify the risk groups with poor knowledge about HIV/AIDS.

6.1.2 Knowledge and awareness about HIV/AIDS among males and females (study II)

Among the total population of 1,650 young adults, 390 reported that they had not heard of HIV/AIDS, i.e. 221 (26.8 per cent) males and 169 (20.5 per cent) females.

Varied responses were noted for knowledge and awareness about mode of spread of HIV/AIDS. Among males, 70.7 per cent reported sexual contact as a mode of spread, as did 44.4 per cent of the females. A difference was noted for 'used syringe' and 'HIV/AIDS-positive blood infusion', where substantially more females than males believed these contributed to the spread of HIV/AIDS. Nevertheless, misconceptions about the mode of spread of HIV/AIDS were also identified, such as talking, shaking hands, coughing or eating with an HIV/AIDS-infected person. These misconceptions were more common among the females. Almost twice as many females (28.1 per cent) as males (15.4 per cent) reported that they did not know how the HIV/AIDS virus is spread.

Regarding ways of preventing the further spread of HIV/AIDS, 34.7 percent of the females and 41.3 per cent of the males reported having no knowledge of preventive measures. Furthermore, 41.3 percent of the males and 32.4 percent of the females reported avoidance of sex as a preventive measure, but, when the females and males who also mentioned avoiding 'extramarital sex' were added together, the difference was smaller.

In the next step, the level of knowledge was categorized and later dichotomized in to poor knowledge and some/good knowledge. Risk factor analysis using the multivariate analyses was performed separately for males and females to explore possible confounding factors and chains of associations. For the males, risk factor analysis using the summarized knowledge variable revealed that young age (17-18 years), less than six years of schooling and no access to computer at home were associated with poor knowledge (Table 7). For the females, young age (17-18 years), low SES, no enrolment

at school and being unmarried were identified as risk factors for a poor knowledge of HIV/AIDS (Table 7). There were no correlations exceeding 0.4 between independent variables in any of the models (Cramer's V).

Table 7. Association between selected socio-demographic factors and poor knowledge of HIV/AIDS among males and females, presented as *adjusted OR* and *confidence intervals* (95% CI), final models, n=1260.

<i>Socio-demographic factors</i>	<i>Males (n=605)</i>	<i>Females (n=655)</i>
Age (years)		
19-21	1	1
17-18	2.20 (1.38, 3.49)	1.74 (1.22, 2.50)
Years of schooling		
≥ 6	1	
< 6	2.46 (1.29, 4.68)	
Own computer		
Yes	1	
No	1.88 (1.06, 3.34)	
Residential status		
Permanent	1	
Migrant	1.23 (0.72, 2.10)	
Socio-economic status		
High to middle		1
Low		1.54 (1.06, 2.22)
Enrolment school/college		
Yes		1
No		1.61 (1.09, 2.39)
Marital status		
Ever married		1
Unmarried		1.85 (1.05, 3.26)

We were able to identify the risk groups for poor knowledge of HIV/AIDS, through the quantitative studies, but for improved understanding of this phenomenon, a qualitative study was carried through (110). In addition to HIV/AIDS, the aim was to acquire a deeper understanding of gender roles, life prospects of young adults and family planning issues (contraceptives). Focus group discussions were used for this as we believed that the participants will feel more confident to discuss such sensitive topics with peers rather than in individual interviews (110).

6.2 Qualitative studies (study III and IV)

Six FGDs were conducted, three for each males and females respectively. Following are the main findings from the qualitative studies.

6.2.1 Perception and beliefs about HIV/AIDS and family planning (study III)

The dominant theme emerging from the FGDs was ‘Need for multilevel strategies to combat the spread of HIV/AIDS and enhanced acceptance of family planning’ (fig 4).

Theme							
Need for multilevel strategies to combat the spread of HIV/AIDS and enhanced acceptance of family planning							
Sub-themes							
Misconceptions and stigma as a serious obstacle to effective HIV/AIDS prevention			Multiple strategies needed to influence knowledge and beliefs about HIV/AIDS among young adults		Cultural and religious barriers to family planning		Seeking information about family planning
Categories							
Perceptions	Attitudes	Stigma	Knowledge	Sources of information	Perceptions and beliefs	Knowledge and attitudes	Sources of information

Fig 4. Examples of themes, sub-themes and categories from the latent content analysis.

HIV/AIDS knowledge, perceptions, attitudes, stigma and sources of information (categories)

Most of the participants from the upper middle class were well aware about the modes of spread of HIV. The participants described various modes of HIV spread such as sexual contacts, used syringes and mother to child transmission. Moreover, they related the knowledge about HIV/AIDS to educational level.

... “I think most of our youth are unaware, owing to illiteracy. Even those who know have very little knowledge about its modes of transmission”. (Male lower middle SES)

Knowledge about HIV prevention varied among the different social classes. Those who were well educated had more knowledge.

... *“We have heard that HIV/AIDS spreads through sexual relations and by using certain measures such as contraceptives (condom) we can protect ourselves. But there are people who are not aware of HIV/AIDS and get the disease from sexual contacts”.* (Male from upper middle SES)

The discussions also revealed that there is poor awareness about HIV/AIDS and that many misconceptions about HIV/AIDS prevail among young adults. Although the participants were aware that HIV/AIDS is a deadly and incurable disease, girls also perceived HIV/AIDS as a sign of modernization.

... *“Today media, movies and internet have resulted in increased interaction and friendship among girls and boys. They tend to ignore all limitations and boundaries and get inspired from the western society and due to this, sexually transmitted diseases are increasing”.* (Female from upper middle SES)

Stigma related to HIV/AIDS was described both by male and female informants as a societal disgrace. Female informants also described that women testing positive for HIV were looked upon as inferior as compared to infected men. They were also blamed more than the males.

Almost all the informants described that media was one of the major current sources of information. However, there was a concern that the messages on television were unclear and vague. Male participants described peers and internet as the main sources of information. A majority of the female participants described that mothers, older sisters and married friends constituted the current sources of information.

...*“Girls are more close to their mothers and older sisters, who can also provide information”.* (Female from low SES).

Furthermore, some of the male participants described cultural constraints in acquiring knowledge about HIV/AIDS.

...*“If a young boy goes to someone asking about AIDS, people refuse him due to his age. It is difficult to get information from adults due to cultural reasons”.* (Male from lower middle SES)

Both males and females stressed doctors in health clinics and parents as the desired sources of information about HIV/AIDS.

...*“Well educated teachers at schools and colleges should impart knowledge on reproductive health and HIV/AIDS. It should also be made a compulsory topic at school/colleges”.* (Female from upper middle SES)

Family planning knowledge, attitudes, perceptions, beliefs and sources of information (categories)

Most of the participants discussed the importance of family planning. They perceived that family planning assists in planning the number of children and is good for the mothers' health. Moreover, they described that family planning help to control population growth.

... "In my perception family planning is very important. We have heard about it from friends and seen related commercials on television". (Female from lower middle SES)

The respondents realized that young adults have inadequate knowledge and poor awareness about family planning. However, the participants highlighted the role of media in creating some awareness and knowledge.

... "I think media, even local television has played an important role in creating awareness amongst the masses. Even the younger boys have at least heard about family planning". (Female from lower middle SES)

Perceived constraints in relation to family planning were discussed among the participant's e.g. poor access to information and unavailability of contraceptives. Females also discussed that the decision about family planning in birth control is heavily influenced by the husband and other family members. Moreover, son preference was also mentioned as one of the constraints.

... "In our culture we can not take the decisions about using contraceptives without asking the elders within the household". (Female from low SES)

Cultural reasons and resistance from religious leaders were also described by the informants as barriers to contraceptives usage.

... "Unfortunately in our society, because of cultural reasons, people hesitate to buy family planning stuff from stores in the presence of others". (Male from upper middle SES)

... "Our religious leaders have always disliked family planning. The religious leaders perceive that it is Gods' responsibility to feed and nourish every human being". (Male from low SES)

The participants described television, internet and medical doctors as current sources of information. Male participants also relied on their friends and on television campaigns, whereas the females described that they seek knowledge about family planning from other female members of the household. In addition, girls from upper middle SES described doctors and lady health workers as potential sources of information about family planning. Moreover both males and females stressed doctors and health clinics as the desired sources of information but additional sources were also desired.

... “Schools and colleges can be a better option to disseminate information about family planning”. (Male from upper middle SES)

The discussion revealed that young adults were unanimously willing to acquire proper information about HIV/AIDS and family planning issues.

6.2.2 Young adults’ views on future life prospects and gender roles and its influence on health behaviors (study IV)

In study IV, we explored young adults’ views and perception on their future life prospects and gender roles. In the FGDs we choose to include young adults views about their life prospects as we want to explore their perception and views with the on-going rapid societal change and its implication on health their behavior.

One major theme emerging from FGDs was ‘Expectations of young adults in a changing society is hampered by psychosocial and gender equality constraints’ (fig 5).

Theme							
Expectations of young adults in a changing society is hampered by psychosocial and gender equality constraints							
Sub-themes							
Emerging life prospects counteracted by societal perceptions			Gender roles in transition				
Categories							
Educational demand and imbalance	Job opportunities: a challenge	* Young women’s perceptions on gender notions	Changing interaction patterns	Male tasks	Attributes of husband	Female tasks	Attributes of wife

*Category from female FGDs only.

Fig 5. Examples of themes, sub-themes and categories from latent content analysis.

Perceptions and views about future life prospects: educational demand and job opportunities (categories)

Young adults were well aware about the importance of education and were eager to acquire higher education. Both males and females stressed the importance for high quality education which should be for everyone. Moreover, female participants from low SES group with no formal education further expressed that an educated mother can nurture her child in a better manner than an uneducated mother.

... “We should acquire quality education first and then get a good job before thinking of marrying someone. Getting married is also important but it should be later when you are in a position to support your family”. (Male from low SES)

The demand for good education was discussed by all the participants irrespective of social strata and sex. However, participants also discussed that poor governmental support and cultural constraints were major barriers to acquire education. Moreover, females also mentioned family restrictions and marriage as one of the hurdles in seeking education.

... “I think education is most important. Once we get married we have to look after our husbands and children and then it’s really difficult or rather impossible to get education”. (Female from low SES)

Female participants also discussed parental restrictions and lack of a proper transport system as one of the constraints. Male participants specifically from low SES groups expressed that corruption in education is a barrier to good education.

... “Our education system is not transparent. Rich people can influence and manipulate their exam papers through money and their personal contacts, and unfortunately the poor are the sufferers”. (Male from low SES)

Participants were very eager about their goals in life and willing to excel their potential in order to have a prosperous future and a peaceful life. All the participants, irrespective of sex or social class belonging, stressed the importance of education for better employment opportunities.

Furthermore, female participants discussed that the current economic crises necessitated females to seek employment.

... “ A woman should not only take care of her house but also work to earn money to tackle economic crises”. (Female from lower middle SES)

The participants described corruption, lack of respectable jobs and less mobility for women as the biggest obstacles for employment.

... *“Nowadays, only a person who has good public relations and contacts gets a good job”*. (Male from upper middle SES)

Perceptions on gender notion, changing interaction patterns between males and females and assigned male/female tasks (categories)

The female informants from different social classes described that society is primarily male dominant with open gender discrimination. Moreover they identified cultural barriers which offset female autonomy.

... *“Parents should allow their children to breath, small restrictions are fine but girls should feel independent”*. (Female from upper middle SES)

Females expressed that males should acknowledge females independence and respect it accordingly.

“Due to acknowledged discrimination, women have become desperate and intolerant. Men do not seem to respect the members of the opposite sex. We should work towards the elimination of this discrimination and create awareness that both sexes are equal and they should be respected in the same way”. (Female from upper middle SES)

The informants viewed that with the modernization of society, interaction between boys and girls has increased. Participants unanimously appreciated this changing pattern. Furthermore, participants also discussed the younger generation’s higher level of gender awareness and the existence of a generation gap.

... *“As in the past years, boys and girls were more conservative and avoided talking to each other even at school and in colleges. Nowadays, things have changed as boys and girls not only interact in school but also in the neighborhood”*. (Male from low SES)

These changes were attributed to the effect of the media including cable TV and magazines and more frequent use of the internet for ‘chatting’ and cell phones for ‘messaging’.

... *“ We are under a lot of influence from the Western culture, which is the reason why male and female interaction has increased in recent years. Media is also responsible for these changes”*. (Male from lower middle SES)

The participants also discussed that increased interaction between males and females and limited knowledge on reproductive health issues may enhance health risks making the younger generation vulnerable to STDs.

... *“I think we can not stop the male and female interaction because it is natural. We should rather work towards educating our youth about the hazards and risks of physical relationships and the advantages of using condoms etc”*. (Female from upper middle SES)

The informants were well aware about the traditional division of tasks between males and females. However, some of them discussed future gender roles and mentioned some additional tasks for men to fulfill, which culturally are identified as female tasks.

... “ If the wife is also working, then the husband should also cooperate and should assist his wife in household tasks e.g. washing dishes, making tea etc”. (Female from lower middle SES)

Male participants identified that the responsibility to earn money is a major male task, but they should also share household responsibilities.

Both males and females from different social classes, described that a good husband should be caring, able to earn money, and respect his wife. A good husband should also share equal rights with his wife and respect female autonomy.

The informants expressed that a bad husband is one who is irresponsible and quarrelsome. Moreover, he disrespects his wife and believes in domestic violence.

Participants described the female tasks as much ingrained according to local culture such as cooking, cleaning and looking after the children. Both males and females participants also stated that women should also earn money.

... “Now, in a current more demanding situation with the globalization and economic development I feel both husband and wife should earn money to sustain and lead a happy life. I mean that the wife should also be working”. (Male from upper middle SES)

There was unanimous agreement among the participants that a good wife should be able to look after the house, respect her in-laws and be trustworthy. Moreover, a good wife should be economical in spending money and share good level of understanding with her husband.

Participants expressed the attributes of a bad wife as careless, irresponsible and materialistic.

7. DISCUSSION

Investigating the reproductive health issues is a big challenge in a Muslim society. This study focuses on individuals aged 17-21 years, which is not only a period of transition to adulthood but a separate period of the life course. According to Arnett, who proposed the term ‘emerging adulthood’, there are five features which make this age group distinct i.e. age of identity explorations, age of instability, the self- focused age, the age of feeling in-between and the age of possibilities (117). This study addresses the challenges and barriers to better health for the younger generation in Pakistan. Serious gaps in knowledge and awareness regarding HIV/AIDS and family planning was found, which might influence young peoples’ health behavior towards unsafe sexual practices. Risk factor analysis for HIV/AIDS supported the fact that young age and low level of education are important, as is low socio-economic status. Furthermore unmarried females were less informed as compared to married females. It was also revealed that twice as many females as males had to leave school/college for reasons beyond their own control. The main reasons mentioned by both males and females were economic constraints in the family. However, females also reported culturally ingrained, gender-related reasons such as early marriage, parental pressure and household duties.

Myths and misconception about HIV/AIDS spread and prevention were also common. HIV/AIDS was regarded a social stigma. Discussion about family planning also revealed opposition by religious leaders. Our study suggests that young males mostly get the information about HIV/AIDS from friends and media, whereas females get it from their mothers and elderly sisters, which is reflective of cultural values in Pakistan.

Modern trends of male and female interaction have reshaped the views of the younger generation in Pakistan. Young people are highly motivated to acquire high quality education and a respectable job. The participants stated gender equality in relation to household matters and earning money as an issue of importance for future family life. They also criticized traditional beliefs about male and female tasks as defined by society i.e. they demonstrated more advanced gender equality attitudes than what maybe expected by society at large, where more traditional gender roles are still seen ideally.

From a public health perspective, the Pakistani society faces challenges of being able to live up to the expectations of the younger generation and offer a favorable environment where the young people can satisfy their demands for improved life prospects.

7.1 Methodological considerations

In this thesis both quantitative and qualitative methods were used. Both of these methods are defined with different terminologies in relation to their validity and reliability.

Validity refers to the degree to which the study measure what it is supposed to measure (118). In quantitative methods it is referred to as ‘internal validity’, whereas in qualitative methods it is called ‘credibility’. ‘External validity’ or generalizability is used in

epidemiological studies whereby the researcher analyses the sample results aiming to generalize the findings back to the parent population (statistical generalization)(110). In a qualitative study it is 'transferability', whereby the researcher aims at generalizing his discovered theories beyond their small sample through logical reasoning (analytical generalization) (110).

In epidemiological studies, 'Reliability' refers to consistency of the findings if the research is repeated in a similar context (118). In a qualitative study the concept of reliability is defined as 'Dependability'; as repeating the qualitative study is illogical. However to ensure consistency in a qualitative study, the findings and the process of research should be shared with another researcher for authentication (110).

7.1.1 The Quantitative study

As a cross-sectional study was conducted therefore no causal relationship can be established (119). However, it scrutinizes each of the independent and dependent variable to justify temporal relationship. There is a time sequence between the independent and dependent variables which make it plausible that there are some causal factors that we have uncovered. To mention a few of these; poor knowledge about HIV/AIDS is most probably due to a lack of enrolment at school/college or low educational achievement. The lack of a computer in a household may lead to poor knowledge about HIV/AIDS. Similarly, young age is associated with less knowledge, which is also logical.

In this study; a multi-stage cluster sampling technique was used to identify the participants, based on stringent criteria. The sample was collected from all over Karachi and randomness was ensured at each step in order to obtain a representative population. The questionnaire used for data collection was based on validated instruments from national surveys (102, 103). The interviewers were well versed with the questionnaire and strictly followed the instruction manual. Furthermore, the field manager scrutinized each form at the field site for the completion and good quality of data.

The dependent variables i.e. knowledge of STDs and HIV/AIDS were defined with a minimal threshold i.e. those having at least some awareness were labeled as having knowledge. This rather generous interpretation might have overestimated their level of understanding about STDs and HIV/AIDS, in which case it underscores the need for further education. Moreover, knowledge about STDs and HIV/AIDS were assessed by open ended questions, i.e. these items required the respondent to take a stand to formulate an answer, as opposed to when pre-set responses are used. This procedure was judged to sufficiently reflect knowledge and awareness. Furthermore, Cronbach's alpha coefficient was used to measure the internal consistency of the items defining the dependent variable (knowledge of HIV/AIDS); it was 0.75, which is quite acceptable (120). Despite strong religious and cultural beliefs leading to young people being reluctant to talk about sexual matters, we believe this study accurately discriminated between those with no basic knowledge and awareness about STDs and HIV/AIDS and those with at least some information.

Our study findings may be generalizable as we consider them applicable to urban populations throughout Pakistan. Yet the situation is somewhat different in northern parts of the country where there is lower level of education and poor awareness about health behaviors in the population.

By applying qualitative methods the results from the quantitative study were complemented by methodology triangulation (110).

Some of the limitations in this study were that 10-15 percent people in the blocks of the higher socio-economic status areas refused to participate. This was taken into account by moving to an adjacent household. Moreover, we were also bound to change one of the union council in an affluent area due to their refusal. Hence another union council was selected but with slightly lower SES. This selection bias, which comprised of only 92 participants, might have lead to an overestimation, as those who belong to higher socio-economic strata usually have better educational status and awareness. However, due to the low number of participants concerned (n=92), the influence of this bias on the associations is considered to be minor. Another limitation was that, due to strong religious and cultural beliefs, only questions phrased in a general sense could be asked and issues such as the individuals' own sexual experiences could not be discussed. Despite these constraints, we believe that this study was able to identify knowledge and awareness among the young people to benefit the design of appropriate interventions.

7.1.2 The qualitative study

To explore sensitive topics such as HIV/AIDS and family planning, qualitative approach using FGDs ensure better understanding to assess the perceptions of young men and women (121). We believe it was a feasible strategy to gather their views in groups as participants may feel more confident to discuss such sensitive topics surrounded by peers rather than by being interviewed individually (110). To avoid any personal information by the participant the moderator phrased the issues in terms of how 'young people think about' etc. FGDs hereby offered a shelter for the informants to express their own experiences in a generalized manner.

Trustworthiness

In a qualitative research 'trustworthiness' has been described conceptually by various aspects; such as, credibility, dependability, confirmability and transferability (110, 116). Credibility (internal validity) deals with the true value of research and refers to the ability to actually capture the multiple realities of those studied; which means how well the data collection and analysis were planned and addresses the focus of the research (110).

For data collection, FGDs were conducted in local language (Urdu), separately for males and females with varying age groups and social strata, with male and female moderators respectively, which ensured an open discussion (116). Findings were also tape-recorded

to authenticate the notes. Moreover, in order to ensure data quality two of the FGDs were back translated by a third person to make the meanings consistent. Furthermore a brief meeting was held after each FGD amongst all the Pakistani team members to ensure the data quality and to discuss any emerging themes. Triangulation of researchers in analyzing data and sharing the preliminary finding with the colleagues (peer-debriefing) streamlines the research process and increases the credibility of the study. Incorporating insiders' perspective (local investigators) is further broadened by the outsiders' views (foreign investigators) (110). Moreover these findings are supported by results obtained from quantitative study I and II (122, 123), which also ensured credibility, by triangulation of research methodologies (110). The findings were also shared and approved by the study participants, which also ensured the credibility of the study (110). The quotations given in the study are proposed to facilitate the reader's evaluation of the creditability of results (116).

Dependability (comparable to reliability) refers to measures taken by the researcher to adapt to constantly changing conditions pertaining to the research conducted, through inquiry audit by another researcher (checking the process of research) (110). In this study, dependability was ensured by following a 'decision trail' by another researcher who checked the process of research and any emerging theme. Confirmability (objectivity) means that interpretation of findings are not influenced by the researchers imagination but in fact clearly derived from the data, which is also verified through inquiry audit by another researcher (110). The audits for achieving dependability and confirmability are often combined in one activity.

In this thesis, confirmability of the study was ensured by sharing the analysis plan and the citations with another researcher (110). A research colleague who was not involved in the study was asked to combine the selected citations, main theme, categories and sub-categories emerging from the study. He was also asked to relate these with the conclusion of the study. As there was congruence between researchers within and outside the study, this procedure strengthens the trustworthiness of the study.

Transferability (comparable to external validity or generalizability) means that findings from qualitative research can be applied or transferred to other context and subjects (110). As with qualitative studies in general, it is not possible to generalize the findings (115). However, the selection of participants with both males and females of varying age groups from different parts of Karachi and from different social strata, make it probable that the derived main theme is applicable to a wider (similar) population, as analytic descriptions and theories applied within a certain context can enhance the understanding of specific phenomena in a wider population (124). Moreover, carefully conducted and analysed FGDs may be transferable to other population groups with similar characteristics (125-127).

This study did not enroll participants from the higher SES as it was almost impossible to approach them due to resistance of the community; however there is no reason to believe that these young men and women would not share the same opinions as the participants of this study (living in an urban area in the same era).

7.2 Result Discussion

7.2.1 Knowledge and awareness about HIV/AIDS and family planning (contraceptives)

Results showed participants had inadequate knowledge and awareness about HIV/AIDS (study II and III) these results are also consistent with similar national surveys on adolescents and youth (103), which improve validity and reliability of this study. About 76% responded that they have heard of HIV/AIDS (study II). It was somewhat surprising to discover that more females than males responded positively when they were asked 'have you heard of HIV/AIDS'? This could be explained by the fact that females are more exposed to TV and radio broadcast campaigns about HIV/AIDS, as they spend more time at home. These campaigns have some effect in conveying messages (103). Furthermore, females get information on reproductive health issues from their mothers or elder sisters (study III). Interestingly, more males than females named sexual contact as the major mode of spread, while more females than males mentioned used syringes (study II). This finding could be explained by the fact that females are more reluctant to mention sexual matters, due to cultural norms while males can openly discuss these issues with a stranger (interviewer).

Risk factor analysis using the summarized knowledge variable revealed different factors for poor knowledge of HIV/AIDS among males and females except for the young age (study II). This difference could be easily explained as males and females face different life circumstances due to gender disparities (128) in terms of school enrollment (99) and access to health care information and services (129).

Misconceptions about preventive strategies against HIV/AIDS were also found (study II and III), which are consistent with findings in a study conducted among college students in Lahore, Pakistan, where misconceptions like the spread of HIV/AIDS through nose/ear piercing and the use of second hand clothing were identified (130). A study from the United Arab Emirates investigating HIV knowledge among first-year university students found that serious misconceptions existed and also women were less knowledgeable than men (131).

The participants, while discussing the issues of family planning and contraceptive usage, believed that the population is growing tremendously and that practicing family planning is the need for today (study III); to build a prosperous country (132) and prevent the development of sexually transmitted diseases (133). This positive attitude of the participants towards family planning is also consistent with a national survey on youth (103). Female participants mentioned that the decision to use contraceptives mainly depended on the husband (study III). An analysis of Pakistan Reproductive Health and Family Planning survey 2000 revealed that husbands' desire for more children and preference for the sex of the next child are the main barriers to contraceptives use (134). Lack of female autonomy is another constraint as women need to seek husband's permission to use any contraceptives (135).

Generally the participants mentioned that they get the information about family planning from the public service messages on TV (study III); only mentioning about pills and condoms. However, the participants believe that most of the people are ignorant about the proper usage of family planning methods (study III), similar concern were showed by another survey conducted on youth (103). Participants from upper middle SES however mentioned that condom can be used as a preventive strategy against STDs including HIV/AIDS. This is also consistent with another study conducted on college students in Pakistan (130).

The health and well-being of adolescents is closely related to their physical, psychological and social development (136). However, increase in population growth, rapid telecommunications, enhanced traveling is likely to contribute to unprotected sexual relations before marriage (136). However, knowledge about HIV/AIDS and perceived risk of HIV infection often show little or no association with engagement in high risk sexual behavior (22). This suggests possible reciprocal relationships between risk behaviors and risk perceptions and should be considered while developing educational and intervention programs.

7.2.2 Changing gender roles - effect of globalization

Rapid globalization, urbanization, electronic communication and economic challenges have not only reshaped the socialization process but also affect the health needs of adolescents and youth (137). Furthermore, the availability of private television channels and high speed internet has now revolutionized the Pakistani society. It is mainly the younger generation that uses these means for better global connectivity and access to information. Neither males nor females are expected to have pre-marital sexual relationships; however, this situation is likely to change rapidly, as young people are eager to catch up with modern western trends (138).

Both males and females from all social strata pointed at the lower status of women in this society, and described how women are deprived of decision making power and independence (study IV). This is also consistent with another qualitative study conducted on young women in slum area of Pakistan, which showed submissive attitudes of young women to their husbands (139). These gender roles are all well-established. A man is supposed to earn money, while a woman is supposed to marry and take care of the household in her new home rather than earning money for her family of origin (140). Similar findings were revealed in a study conducted in neighboring India (141).

Modern trends in interaction between the sexes have reshaped the views of the younger generation in Pakistan. Today, males and females in schools/colleges meet and communicate openly with each other; they also rely on modern ways of communication like internet and cell phones. Young people are highly motivated to acquire high quality education and a respectable job (study IV), which is not only due to increased globalization but is also a requirement for better sustenance (142).

The root causes of gender inequality lies with ‘gender relations of power’, which specify how men and women interact with each other, but gender inequality also affects individuals’ health status (143, 144). Today a high level of gender equality is regarded an essential element of human rights (145).

The young adults expressed gender awareness attitudes and stated a belief in gender equality in relation to household matters and earning money (study IV). They also criticized traditional beliefs about male and female tasks as defined by society. Awareness about gender roles may serve as a stimulus for change, leading to improved gender equality (146), although there are still steps to take before practice is changed. The participants in this study seemed to realize that a sharing of house hold tasks and equal employment for women and men is a need of today in Pakistan.

Informants described HIV/AIDS as a social stigma and interpreted this as gender discrimination (study III). The social stigma related to HIV/AIDS generally existed across all the SES groups. This phenomenon is much more pronounced in Muslim societies as the religious values against illicit sexual relationships are strong (147). This is also in concurrence with another study performed among African-American women, where it was found that HIV discrimination and stigma adversely affected women's mental, sexual and physical health (148).

Education

Gender discrimination in terms of education attainment was also evident (study I). About 21% of the males and 43% of the females reported different extrinsic reasons for dropping out of school/college (study I). A national survey conducted in 2001-2002 on adolescents (aged 15-24) reports that approximately 24% of males and 48% of females in the lower-middle social class dropout before completing primary school (102), which corresponds to our findings. The main reasons mentioned by both males and females were economic constraints in the family, but females also reported culturally ingrained, gender-related reasons such as early marriage, parental pressure and household duties (study I) which also corresponds to findings from a national survey (102). Furthermore, migrant residential status, living in an extended family and lower socio-economic status were identified as risk factors for school/college dropout both for males and females (study I). In addition, being married turned out as the strongest factor associated with school/college dropout. Early marriage was a specific reason for females’ dropping out, which supports our hypothesis and earlier findings (98). Non-affordability and parental restrictions (marriage and household tasks) specifically for the girls, came out as major constraint for continuing education, which is also consistent with findings from another study conducted in Pakistan (149). However completion of education does not ensure a secure job in Pakistan, as seeking a respectable job is currently a big challenge. Unemployment and gender gaps in the youth labor market (150) force the younger generation to work at informal settings instead of completing their education (151, 152).

7.2.3 Cultural and religious barriers to seek Reproductive Health information and services

Reproductive and sexual health issues are barely discussed in Pakistan due to cultural and religious reasons; also at the policy level people have reservations. Even with the inclusion of youth as a vital part in the National Population Policy, the intervention programs with regard to these policies are still quiet in terms of implementation.

Young males get most of the information about HIV/AIDS from friends and media (study III), as they are hesitant to discuss reproductive health issues with their parents. Parents on the other hand do not feel comfortable to discuss these issues due to cultural limitations. This study shows that the females get the information about reproductive health issues (HIV/AIDS, family planning) from their mothers and elderly sisters (study III), which is reflective of cultural values in Pakistan, where girls are more close to their mothers. Few research studies in this area indicate that boys are more reluctant to discuss reproductive health matters with their parents than girls (153, 154), which possibly explains our findings as well. To a great extent, males obtain reproductive health information from peers and other sources (153), which can be questioned in relation to accuracy and depth.

This study has come up with new ideas to look into socio-cultural dynamics regarding parental communications about reproductive health issues. Moreover, because of cultural inhibitions, these young adults get embarrassed when asked about family planning supplies. Interestingly, the study participants were more acquainted with HIV/AIDS than with other STDs (study II). This might partly be explained by the frequent TV and radio campaigns exclusively on HIV/AIDS (103). The participants believed that these messages in the media are ambiguous as they lack clarity in conveying the true message.

Cultural and social constraints were mentioned in adopting family planning (study III) this is also supported by another study from Pakistan (155). Both males and females unanimously felt cultural constraints in discussing issues related to family planning or HIV/AIDS with elders (study III). The younger generation believed that it might propel feelings of uneasiness and reluctance which might also lead to violence and disgrace of the young males or females. Resistance from the religious leaders was highlighted as one of the barriers to use contraceptives (study III), which propel some hindrances in seeking family planning services and information. A study conducted in Pakistan revealed similar findings, where it was found that religious leaders are against family planning (156). In rural areas these religious leaders are 'opinion makers' and influence people's decisions even in adopting contraceptives (156). Involving religious leaders could enable reproductive health programs and services to reach more conservative groups in society, and thus contribute effectively to bringing about positive change in the attitudes of Pakistani people (156). On the other hand, Islam in general is not against family planning, as is evident from involvement of religious leaders leading to a very successful family planning program in the Islamic Republic of Iran (157).

In cultures where premarital sex is forbidden and sexuality is considered a sensitive topic, youth have restricted access to the reproductive health information and services (158-160). In Pakistan, currently there are no curricula in schools and colleges to educate students on reproductive health issues. Participants mentioned schools and colleges as an important platform to impart reproductive health information through well designed, age specific curricula (study III). A pilot study conducted on adolescents both males and females from a Muslim country revealed the importance of incorporating the reproductive health curriculum at school level (161). Furthermore, Klepp et al in a quasi-experimental study tested effects of a school based HIV/AIDS education program in 18 primary schools in Tanzania (162). They reported improved knowledge and awareness about HIV/AIDS, which shows the feasibility and effectiveness of school based programs (162).

8. CONCLUSIONS

Young adults in Pakistan are vulnerable to the global HIV/AIDS epidemic. Both young men and women are motivated to acquire good education and employment. Moreover they have started to believe in gender equality. Transition to better education and gender equality will result in new health related challenges, which endorse that these young people should be equipped with proper knowledge about STDs and health related behaviors. However, as the prevalence of HIV/AIDS is still comparatively low, the epidemic has not yet enforced a general discussion on the importance of a well-informed younger generation.

The key conclusions from the thesis are:

- A high proportion of young adults reported dropping out of school/college, females twice as often as males, and there is a reason to believe that these figures are much higher in rural areas.
- Young adults have inadequate knowledge about reproductive health issues (HIV/AIDS and family planning). However they are highly enthusiastic to acquire knowledge about HIV/AIDS and family planning; cultural and religious reasons are potential barriers in this regard.
- There is a huge need to educate young adults and equip them with sufficient information and skills about HIV/AIDS. They should be further supported to adopt healthy behaviors for preventing a widespread epidemic in the general population. Parents should also be encouraged to provide age specific information about reproductive health issues to their children.
- Taboos surrounding the public discussion of sexuality remain a key constraint to preventive activities. Even though they may be young, they should be equipped with appropriate information by their parents rather by any other source.
- The findings of this study indicate that young people in Karachi are keen to acquire good education and a respectable job for better life prospects. They believe that major obstacles in this regard are non- affordability for education and lack of merit system for jobs.
- The younger generation in Pakistan seems to believe in gender equality. A higher level of gender equality will emerge if the younger generation is better educated.

9. IMPLICATIONS FOR POLICY AND PRACTICE

A policy response is required, including guiding principles for how knowledge, attitudes, beliefs and practices can be improved in society, especially among the younger population. This study shows huge gaps in knowledge and awareness about HIV/AIDS. In order to build a healthy nation, certain other steps towards changing behaviors also need attention from policy makers, health staff, the school system and families. Findings from this study will provide input for policy formulation and program design, addressing awareness of HIV/AIDS.

- Youth clinics, which are not available in Pakistan, could also serve as a point of information and counseling to inform and support young people to protect themselves against HIV and other STDs. Rights of young people to make informed decisions and information access should also be considered.
- Schools and health care services could be targeted for the provision of knowledge about reproductive health issues to safeguard the quality of the information and to avoid relying solely on scattered information provided by parents, peers or the media.
- Education for the younger generation is a key component for the country's prosperity; policymakers need to address these issues with priority, not least when it comes to school enrolment and a more balanced gender ratio. Government should plan for cost-effective education for the upcoming generations and follow merit system across all the institutions.
- The school system needs to assume responsibility for life skills education of which sexual and reproductive health issues constitute a major part. Though young adults who are outside the formal educational system also need to be informed; community leaders, youth clubs and peers are key people at grass root level.
- Political leaders need to address young people's need for information, education and services, investing in national gender awareness programs to support the health and development of young people.
- In general, devised policies should consider equal rights for women; specifically in job allocation. Moreover communities should be sensitized for gender equality through different programs at district level. Mass media can also play an important role in this regard.
- Religious leaders need to be sensitized about the importance of family planning as they can play a major role in propagating family planning among the masses.
- This is a matter not only of educating the young people; it also involves a change of attitudes and beliefs to take the final step also to change behavior.

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